



<110> KANEKA CORPORATION

<120> TRANSFORMANT AND PROCESS FOR PRODUCING POLYESTER BY USING THE SAME

<130> 12218/3

<140> 10/019,543

<141> 2002-01-03

<150> PCT/JP01/04158

<151> 2001-05-18

<150> JP 148726/2000

<151> 2000-05-19

<150> JP 396955/2000

<151> 2000-12-27

<150> JP 16929/2001

<151> 2001-01-25

<160> 21

<210> 1

<211> 1785

<212> DNA

<213> Aeromonas caviae

<220>

<221> CDS

<222> 1..1785

<400> 1

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| ctggccatgg | ccaaggccca | gacagagcgc | accgcccagg  | cgctgctgca | gaccaatctg  | 120  |
| gacgatctgg | gccaggtgct | ggagcagggc | agccagcaac  | cctggcagct | gatccaggcc  | 180  |
| cagatgaact | ggtggcagga | tcagctcaag | ctgatgcagc  | acaccctgct | caaaagcgca  | 240  |
| ggccagccga | gcgagccggt | gatcaccctg | gagcgcagcg  | atcgccgctt | caaggccgag  | 300  |
| gcctggagcg | aacaacccat | ctatgactac | ctcaagcagt  | cctacctgct | caccgccagg  | 360  |
| cacctgctgg | cctcggtgga | tgccctggag | ggcgtccccc  | agaagagccg | ggagcggctg  | 420  |
| cgtttcttca | cccgccagta | cgtaaacgcc | atggccccca  | gcaacttcct | ggccaccaac  | 480  |
| cccagctgc  | tcaagctgac | cctggagtcc | gacggccaga  | acctgggtgc | cggactggcc  | 540  |
| ctcttgccg  | aggatctgga | gcgcagcgcc | gatcagctca  | acatccgcct | gaccgacgaa  | 600  |
| tccgccttcg | agctcgggcg | ggatctggcc | ctgaccccgg  | gccgggtggt | gcagcgcacc  | 660  |
| gagctctatg | agctcattca | gtacagcccc | actaccgaga  | cggtgggcaa | gacacctgtg  | 720  |
| ctgatagtgc | cgccttcat  | caacaagtac | tacatcatgg  | acatgcggcc | ccagaactcc  | 780  |
| ctggctgcct | ggctggctgc | ccagggccag | acgggtattca | tgatctcctg | gcgcaacccg  | 840  |
| ggcgtggccc | aggcccaa   | cgatctcgac | gactacgtgg  | tggatggcgt | catcgccgcc  | 900  |
| ctggacggcg | tggaggcggc | caccggcgag | cgggaggtgc  | acggcatcgg | ctactgcatc  | 960  |
| ggcggcaccg | ccctgtcgct | cgccatgggc | tggctggcgg  | cgcggcgcca | gaagcagcgg  | 1020 |
| gtgcgcaccg | ccaccctggt | cactaccctg | ctggacttct  | cccagcccgg | ggagcttggc  | 1080 |
| atcttcattc | acgagcccat | catagcggcg | ctcgaggcgc  | aaaatgaggc | caagggcatc  | 1140 |
| atggacgggc | gcgagctggc | ggctctcttc | agcctgctgc  | gggagaacag | cctctactgg  | 1200 |
| aactactaca | tcgacagcta | cctcaagggg | cagagcccgg  | tggccttcga | tctgctgcac  | 1260 |
| tggaacagcg | acagcaccac | tgtggcgggc | aagaccacac  | acagcctgct | gcgcccgtctc | 1320 |
| tacctggaga | accagctggt | gaagggggag | ctcaagatcc  | gcaacacccc | catcgatctc  | 1380 |
| ggcaagggtg | agaccctgtg | gctgctgggt | tcggcggtgg  | acgatcacat | cgccctctgg  | 1440 |
| cagggcacct | ggcagggcat | gaagctgttt | ggcggggagc  | agcgcttcct | cctggcggag  | 1500 |

|            |            |            |            |            |            |      |
|------------|------------|------------|------------|------------|------------|------|
| tccggccaca | tcgccggcat | catcaacccg | ccggccgcca | acaagtacgg | cttctggcac | 1560 |
| aacggggccg | aggccgagag | cccggagagc | tggctggcag | gggcgacgca | ccagggcggc | 1620 |
| tcctggtggc | ccgagatgat | gggctttatc | cagaaccgtg | acgaagggtc | agagcccgtc | 1680 |
| cccgcgcggg | tcccggagga | agggctggcc | cccgcccccg | gccactatgt | caaggtgcgg | 1740 |
| ctcaaccccg | tgtttgctg  | cccaacagag | gaggacgccg | catga      |            | 1785 |

<210> 2  
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 <212> DNA  
 <213> *Aeromonas caviae*

<220>  
 <221> CDS  
 <222> 1..402

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| gcggaggtag | ccgccttcgc | cgcgctctcg | gaggacttca | accccttgca | cctggacccg | 120 |
| gccttcgccc | ccaccacggc | gttcgagcgg | cccatagtcc | acggcatgct | gctcgccagc | 180 |
| ctcttctccg | ggctgctggg | ccagcagttg | ccgggcaagg | ggagcatcta | tctgggtcaa | 240 |
| agcctcagct | tcaagctgcc | ggtctttgtc | ggggacgagg | tgacggccga | ggtggaggtg | 300 |
| accgcccttc | gcgaggaaa  | gcccacgcc  | accctgacca | cccgcattct | cacccaaggc | 360 |
| ggcgccctcg | ccgtgacggg | ggaagccgtg | gtcaagctgc | cttaa      |            | 405 |

<210>3  
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 <212>DNA  
 <213>Artificial Sequence

<220>  
 <221>CDS  
 <222>1..1785

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| ttggctatgg  | ctaaagctca | aaccgaaaga | actgctcaag  | ccttggtgca  | aactaacttg | 120  |
| gatgatttgg  | gtcaagtttt | ggaacaaggt | tctcaacaac  | catggcaatt  | gattcaagct | 180  |
| caaatgaatt  | ggtggcaaga | tcaattaaaa | ttgatgcaac  | acactttggt  | aaaatctgct | 240  |
| ggtcaaccat  | ctgaaccagt | tattactcca | gaaagatctg  | atagaagatt  | taaagctgaa | 300  |
| gcttggctcg  | aacaaccaat | ttatgattac | ttaaaacaat  | cctatttgtt  | aactgctaga | 360  |
| catttgttgg  | cttctgttga | tgctttggaa | ggtgtcccac  | aaaaatctag  | agaaagattg | 420  |
| agattcttta  | ctagacaata | cgtcaacgct | atggctccat  | ctaatttctt  | ggctactaac | 480  |
| ccagaattgt  | taaaattgac | tttggaatcc | gatgggtcaaa | atttgggttag | aggtttggct | 540  |
| ttattggctg  | aagatttggg | aagatctgct | gatcaattaa  | acattagatt  | gactgatgaa | 600  |
| tccgcttttg  | aattaggtag | agatttggct | ttgactccag  | gtagagttgt  | tcaaagaact | 660  |
| gaatttatatg | aattaattca | atactctcca | actactgaaa  | ccgttggtaa  | aaccccgatt | 720  |
| ttgatcgctc  | caccattcat | taataaatat | tacattatgg  | atatgagacc  | acaaaactcc | 780  |
| ttggtcgctt  | ggttggctcg | tcaaggtcaa | accgttttca  | tgatttctctg | gagaaaccca | 840  |
| ggtgttgctc  | aagctcaaat | tgatttagat | gattatgttg  | ttgatgggtg  | cattgctgct | 900  |
| ttggatgggt  | ttgaagccgc | tactggtgaa | agagaagttc  | acggtattgg  | ttactgtatt | 960  |
| ggtggtaccg  | ctttgtcttt | agctatgggt | tggttgggccg | ccagaagaca  | aaaacaaaga | 1020 |
| ggtagaactg  | ctactttgtt | tactactttg | ttggatttct  | cccaaccagg  | tgaattgggt | 1080 |
| atttttattc  | atgaaccaat | tatcgccgcc | ttagaagccc  | aaaatgaagc  | taaaggtatt | 1140 |
| atggatggta  | gacaattggc | cgtctccttc | tctttgttga  | gagaaaactc  | tttatattgg | 1200 |
| aattactata  | ttgattctta | cttaaaaggt | caatctccag  | ttgcttttga  | tttgttgcac | 1260 |
| tggaaactctg | attctactaa | tgttgccggg | aaaactcata  | actctttgtt  | gagaagatta | 1320 |

|          |          |         |         |         |         |      |
|----------|----------|---------|---------|---------|---------|------|
| tatttgga | aaatcctg | taaagg  | ttaaaa  | gaaacac | aattgat | 1380 |
| ggtaaagt | aaactcc  | tttggt  | tctgcc  | atgatca | tgcttt  | 1440 |
| caaggtac | ggcaagg  | gaaatt  | ggtggt  | aaagatt | attggcc | 1500 |
| tccggtc  | ttgctgg  | tattaat | ccagctg | acaaata | tttctgg | 1560 |
| aatgg    | aagctga  | tccaga  | tggtgg  | gtgccac | tcaagg  | 1620 |
| tcctgg   | cagaaat  | gggttt  | caaacag | atgaagg | tgaacc  | 1680 |
| ccagcc   | tcccaga  | aggttt  | ccagctc | gtcact  | caaagt  | 1740 |
| ttaaacc  | ttttcgc  | tccaacc | gaagatg | cttaa   |         | 1785 |

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<211>405

<212>DNA

<213>Artificial Sequence

<220>

<221>CDS

<222>1..405

<400> 4

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| atgtctg | aatcctt | agttggt | aaagct  | tatctaa | attcgg  | 60  |
| gccgaag | ctgcttt | tgcctta | gaagatt | acccatt | cttggat | 120 |
| gcttttg | ctactac | cttcgaa | ccaatcg | atggtag | gttagct | 180 |
| ttatttt | gtttgtg | tcaaca  | ccaggta | gttctat | tttgggt | 240 |
| tctttat | tcaaatt | agtcttt | ggtgat  | ttaccg  | agttgaa | 300 |
| actgctt | gagaaga | accaatt | actttga | ctagaat | caactca | 360 |
| ggtgctt | ctgttac | tgaagct | gtcaa   | attgc   | cataa   | 405 |

<210> 5

<211> 1036

<212> DNA

<213> Yarrowia lipolytica

<220>

<223> promoter ALK3p

<400> 5

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| ctgcagc  | gagaccg  | ctgggcc | tacgacg  | ctggagg | gctccgg | 60   |
| aatctct  | gacgggc  | gatcttc | gaccacc  | ccggac  | caagtgg | 120  |
| gaggggg  | ttccctg  | caagagt | aagagt   | acggca  | agtcaat | 180  |
| gatgagc  | ctactaa  | acaaaaa | tgaaca   | ccggttt | tacgata | 240  |
| gagccgg  | gtggaca  | agctgct | cgaacat  | gggagca | ccccac  | 300  |
| cagtatt  | caaggga  | gaagtgg | cggcaaa  | ttggcct | tcaacaa | 360  |
| gtcatca  | ccgtctc  | atccgtc | acgtga   | tgttact | atcttt  | 420  |
| tactggt  | gagctac  | gccaa   | cctgtg   | gtctata | gttact  | 480  |
| atgtaata | agtacga  | aatgtat | actggt   | cacagta | gacggag | 540  |
| atgaatc  | caccaccc | aaacatt | tccaaac  | gttatat | cttact  | 600  |
| tggctga  | agactc   | gggcct  | agagggg  | tgtgtga | agatgcc | 660  |
| aagtga   | gcatttt  | gggcagg | aaaacca  | tttgtgg | tagaacc | 720  |
| caaatga  | taaatga  | ctcccaa | gaaccac  | cttcctc | tcaaagc | 780  |
| gcgaaat  | ctccgtc  | ttctcgg | cttagcc  | cgacgcc | ttacgat | 840  |
| ccgccac  | aatgcgt  | acttgc  | atgcgt   | atacag  | atctgt  | 900  |
| tatgcac  | ttcccc   | aactga  | tatatata | tactgta | actcct  | 960  |
| tggcacg  | atccctg  | acagca  | tacagta  | tactctg | gtatttt | 1020 |
| atactgg  | acg      |         |          |         |         | 1036 |

<210>6

<211>1017

<212>DNA

<213>Candida maltosa

<220>

<223>promoter ALK1p

<400>6

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|------------|------------|------------|------------|-------------|------------|------|
| atgcatgaac | aggatttaat | cccaagaaaa | aagtctat   | tctattttca  | caaggaaact | 60   |
| ggaaaaac   | ctt        | tgaagtag   | ccgtaata   | ctgtaaaaa   | ataaattttg | 120  |
| aagatttg   | ac         | aaatgctat  | agtgtagct  | tagacttgat  | actagactat | 180  |
| gatggcaac  | at         | aacgtgcaag | acatcaccca | atgagaagac  | tgctaaccag | 240  |
| aaaaaaaa   | agg        | ggacaaaaga | aaaactcgag | agaaaaagtc  | aaattgggtg | 300  |
| at         | tttttggt   | ctttccta   | at         | gttttaaa    | attccagttt | 360  |
| aagatttc   | ga         | ccaattat   | tt         | aatccata    | tgatcttcat | 420  |
| taataatc   | ga         | ggtacgttta | atacgagata | ttagtctacg  | gctatgaatg | 480  |
| ttcattgac  | g          | atcagaagct | tgattgggta | ttcagggtgca | tgtgtggata | 540  |
| aaattatct  | a          | gcaactgtgc | cttccccaca | ttgggtcaaag | aaaccctaaa | 600  |
| atctggata  | a          | ataaatcatt | catttcacat | tttccgggta  | gtataagggt | 660  |
| ttttttac   | ag         | tttagccctt | tcaattacca | aatacggtaa  | caatgtgctt | 720  |
| aggggat    | ttt        | ctccgttgc  | gttttctcca | catgctttta  | atgtgtaata | 780  |
| attacaaag  | a          | aaaaccggca | tataagcatc | ggagtttaca  | ttgttaacta | 840  |
| ggcgatgt   | ttt        | caaatcaaca | aaatttaaaa | aaaccccaaa  | aaaaaagtat | 900  |
| aaactcaaa  | a          | tccttttgat | tgcataaaat | ttttaaatct  | cttctttttt | 960  |
| ctttcttat  | c          | tattctattc | tttttttata | tatctaattc  | atttataaca | 1017 |

<210>7

<211>218

<212>DNA

<213>Candida maltosa

<220>

<223>terminater ALK1t

<400>7

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| taataaaaa  | at         | ttttagatt  | atttatatgc | aaaaaaaaa  | aatattcaaa | gcaatcttcc | 120 |
| tttctttct  | t          | tatctttccc | ccatgctaag | gtctaaaaca | ccacaactta | aaacccaact | 180 |
| taaccgtata |            | atactaagat | caatctccaa | agatgcat   |            |            | 218 |

<210> 8

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 8

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<211> 35

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<213> Artificial Sequence

<220>

<223> primer

<400> 9

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<220>  
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<400> 12  
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<210> 13  
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<400> 13  
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<210> 14  
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 actttgacga tacattcttc gttggaggct gtgggtctga cagctgcgtt ttcggcgcgg 180  
 ttggccgaca acaatatcag ctgcaacgct attgctggct ttcatcatga tcacattttt 240  
 gtcggcaaag gcgacgcccc gagagccatt gacgttcttt ctaatttgga ccgatagccg 300

|             |             |             |             |             |             |      |
|-------------|-------------|-------------|-------------|-------------|-------------|------|
| tatagtccag  | tctatctata  | agttcaacta  | actcgtaact  | attaccataa  | catatacttc  | 360  |
| actgccccag  | ataaggttcc  | gataaaaagt  | tctgcagact  | aaattttattt | cagtctcctc  | 420  |
| ttcaccacca  | aaatgccctc  | ctacgaagct  | cgagctaacg  | tccacaagtc  | cgcttttgcc  | 480  |
| gctcgagtgc  | tcaagctcgt  | ggcagccaag  | aaaaccaacc  | tgtgtgcttc  | tctggatggt  | 540  |
| accaccacca  | aggagctcat  | tgagcttgcc  | gataaggtcg  | gaccttatgt  | gtgcatgac   | 600  |
| aagaccata   | tcgacatcat  | tgacgacttc  | acctacgccg  | gcactgtgct  | ccccctcaag  | 660  |
| gaacttgctc  | ttaagcacgg  | tttcttcctg  | ttcgaggaca  | gaaagtctgc  | agatatggc   | 720  |
| aacactgtca  | agcaccagta  | caagaacggg  | gtctaccgaa  | tcgccgagtg  | gtccgatatc  | 780  |
| accaacgccc  | acggtgtacc  | cggaaaccgga | atcattgctg  | gcctgcgagc  | tgggtgccgag | 840  |
| gaaactgtct  | ctgaacagaa  | gaaggaggac  | gtctctgact  | acgagaactc  | ccagtacaag  | 900  |
| gagttcctgg  | tcccctctcc  | caacgagaag  | ctggccagag  | gtctgctcat  | gctggccgag  | 960  |
| ctgtcttgca  | agggctctct  | ggccactggc  | gagtaactca  | agcagacccat | tgagcttgcc  | 1020 |
| cgatccgacc  | ccgagtttgt  | ggttggcttc  | attgccccaga | accgacctaa  | gggcgactct  | 1080 |
| gaggactggc  | ttattctgac  | ccccgggggtg | ggtcttgacg  | acaagggaga  | cgctctcgga  | 1140 |
| cagcagtacc  | gaactgttga  | ggatgtcatg  | tctaccggaa  | cggatatcat  | aattgtcggc  | 1200 |
| cgaggtctgt  | acggccagaa  | ccgagatcct  | attgaggagg  | ccaagcgata  | ccagaaggct  | 1260 |
| ggctgggagg  | cttaccagaa  | gattaaactgt | tagagggttag | actatggata  | tgtcatttaa  | 1320 |
| ctgtgtatat  | agagagcgtg  | caagtatgga  | gcgcttgctc  | agcttgtagt  | atggtcagac  | 1380 |
| gacctgtctg  | atcgagtatg  | tatgatactg  | cacaacctgt  | gtatccgcat  | gatctgtcca  | 1440 |
| atggggcatg  | ttgttgtgtt  | tctcgatacg  | gagatgctgg  | gtacaagtag  | ctaatacgat  | 1500 |
| tgaactactt  | atacttatat  | gaggcttgaa  | gaaagctgac  | ttgtgtatga  | cttattctca  | 1560 |
| actacatccc  | cagtccaat   | accaccactg  | cactaccact  | acacccaaac  | catgatcaaa  | 1620 |
| ccaccatggg  | acttcctgga  | ggcagaagaa  | cttggttatgg | aaaagctcaa  | gagagagaag  | 1680 |
| ccaagatact  | atcaagacat  | gtgtcgcaac  | ttcaaggagg  | accaagctct  | gtacaccgag  | 1740 |
| aaacaggcta  | gctcgtcgtg  | ttcaggaact  | gttcgatggg  | tcggagagag  | tcgccgccca  | 1800 |
| gaacatacgc  | gcaccgatgt  | cagcagacag  | ccttattaca  | agtatatcca  | agcaagtata  | 1860 |
| tccgtagggg  | gcgggtgatt  | tggatctaag  | gttcgtactc  | aacactcacg  | agcagcttgc  | 1920 |
| ctatgtttaca | tcctttttatc | agacataaca  | taattggagt  | ttacttacac  | acgggggtgta | 1980 |
| cctgtatgag  | caccacctac  | aattgtagca  | ctgggtacttg | tacaaagaat  | ttattcgtac  | 2040 |
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